

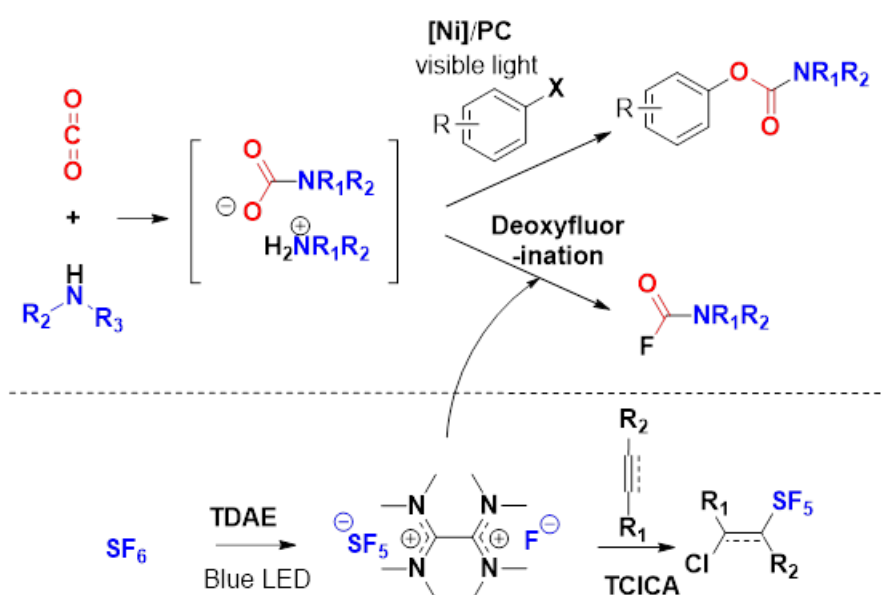
# Advancing CO<sub>2</sub> and SF<sub>6</sub> Conversion and Beyond: Harnessing New Opportunities in Small Molecule Valorization

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Our research group is dedicated to developing novel methodologies and catalysts to activate and enhance the value of small molecules.<sup>1</sup> In this regard, our presentation will highlight recent breakthroughs achieved in our laboratory focusing on the utilization of CO<sub>2</sub> and SF<sub>6</sub>. Firstly, significant advancements have been made in developing an innovative carboxylative aminative cross-coupling process for the synthesis of Aryl carbamates using a dual nickel/organophotocatalysis approach.<sup>2</sup> Additionally, we have demonstrated that CO<sub>2</sub> could be used as a C1 unit to synthesize carbamoyl fluorides through unprecedented deoxyfluorination of CO<sub>2</sub>. Carbamoyl fluorides are bench-stable compounds that serve as valuable building blocks.<sup>3</sup> It is important to note that, in addition to commercially available deoxyfluorination reagents, we've successfully demonstrated that SF<sub>6</sub>, as the most potent greenhouse gas, could also be used for deoxyfluorination purposes to access carbamoyl fluorides.<sup>4</sup> Finally, the valorization of SF<sub>6</sub> in pentafluorsulfanylation reactions has also been undertaken to address major issues related to chloropentafluorsulfanylation of unsaturated compounds effectively tackling concerns regarding the availability and toxicity associated with Cl-SF<sub>5</sub>.<sup>4</sup>



<sup>1</sup> For selected contribution from our group please see: *Angew. Chem. Int. Ed.* **2018**, *57*, 11781; *Angew. Chem. Int. Ed.* **2020**, *59*, 18948; *ACS Catal.* **2023**, *13*, 12553; *Chem. Sci.* **2023**, *14*, 3893.

<sup>2</sup> *Chem. Eur. J.* **2023**, *29*, e202301271.

<sup>3</sup> *Angew. Chem. Int. Ed.* **2019**, *58*, 12545.

<sup>4</sup> *Angew. Chem. Int. Ed.* **2022**, *61*, e202204621.